



NeoLOAD Testing Requirement

Performance Testing of .NET Web application and Flash based Cold Fusion Intranet application for Park Reservation Management

Client Profile

Gateway's services helped the Client to reserve several transactions and improvised on the performance of the set of applications based on our suggestion and conclusion on the tests executed. They could also accept our identification of the bottlenecks and other major loop holes of the set of applications that were visible during performance testing; it resulted in an enhanced customer experience while using the set of applications.

The Client is a company based out of United States, specializing in reservation of campsites, parks, harbor, beach, marines and other recreation related applications. Their set of applications provide access to general public and also to their local residents for reservation of campsites, parks, harbor, beach, marines and other recreation related locations.

The recreational locations and their set of applications are spread across different states of United States and can be accessed to general public and the local residents for reservation through their set of applications.

They have different set of public web sites prepared with .NET Framework and also different set of field applications which is entirely developed and designed in Cold Fusion having Flash components. These set of applications are based on recreation locations situation at Texas, Slo Co, North Carolina, Michigan and many other States of United States. The set of public web sites help general public to reserve any of the recreational locations and the set of field applications is intranet applications which help the local residents to reserve the recreational locations.

The Project

Testing Labs helped the client in doing end to end performance testing, stress testing and display of multiple reservations in their set of applications and database. Gateway also did Stress Testing on a particular module to identify the capacity of number of users able to access the page simultaneously.

The set of applications we tested for performance is a recreation reservation management system which deals with reservation of recreation locations through set of web applications and field applications.

The project is set of .NET web applications and Flash based Intranet applications prepared in Cold Fusion with Oracle as back end.

Some of the salient features of the set of applications are

- The set of applications basically helps users to reserve the recreation locations placed at different States of United States through its set of web applications and/or intranet applications.
- User can reserve any recreation location for any number of people for number of nights they want to reserve.
- They can even rent the items used for recreation other than purchasing them.
- The retail items can also be utilized.
- If required user can void the transaction and they are refunded with the amount spend for their reservation.
- The reservation can be done by a new customer as well as existing customer

Business Need

The client had approached us to take care of the stability and performance of their set of web-based and flash based recreation reservation related applications. They needed multiple reservations to take place automatically with a stable environment with seamless performance for their business even at peak load.

Client was looking for the following characteristics in their offshore partner:

- Understand the flow of set of applications and execute performance testing within their time and budget constraints.
- Properly utilize performance testing tool license provided by them for test execution.
- Install Load Generators (Agents) of the performance testing tool in different machines at our end and use them during test execution.
- Test execution was to be done before and after their working hours.
- Completing the entire testing cycle for the scenarios they specify on daily basis.
- Carry out retesting round for the test already executed and compare the test results with previously tested test results.
- Preparing consolidate test reports for the test executed on daily basis along with preparation of comparison test reports for regression round of testing.
- Interact with them on daily basis during and after working hours.
- Give live demo of tasks done on alternate days.
- Delivery of test scripts and test reports that is generated by performance testing tool at end of the project.

The overall scope of assignment was to perform load testing to confirm stability and performance of the set of applications and to derive:

- Fastest and Slowest pages under different peak load conditions with minimum, average and maximum response time for each page.
- Confirm the maximum number of users supporting the set of applications.
- Identify the problem area in terms of front-end, at code level, network and database.
- Identify the defects appearing in the test results and its effect on performance of each page of the set of applications.
- Give conclusion based on the observation and analysis of test results.
- Give suggestions and work around for the problem areas identified.

Our Solution

Gateway closely collaborated with client to understand the requirements and overall functional scope with its underlying business rationale.

Pre-requisites for taking up performance testing exercise:

- Stable system with no crash errors or bugs
- Realistic near-production test environment
- Performance Testing Tools and identification of scenarios
- Performance Requirements in terms of concurrency and number of users

Our Approach

- We first identified, analyzed, confirmed and configured the test environment where testing was performed.
- Test Environment described the type of OS, Browser and its version, settings of the browser, Network configuration, and testing tool used for testing.
- We researched on multiple options for identifying the testing tool which supported Flash components as one of their applications was Flash based.

- We analyzed some open source tools against some commercial tools to do a comparative analysis. We finally suggested using NeoLOAD 2.4.7 to execute load test. We have used NeoLOAD 2.4.7, 2.4.12 and 3.0 trial versions for initial trials of test execution.
- Identified the conditions under which the performance testing could be executed. The conditions are the dependencies and assumptions that needed to be fulfilled before starting test. E.g. live server application without functional errors, high bandwidth internet speed with instant connectivity to web server and properly configured Firewall settings and network protocols.
- Install the license key of NeoLOAD 2.4.7 provided by the Client and activate it with help of NeoLOAD support team. Properly utilize performance testing tool license provided by them for test execution.
- Install Load Generators (Agents) of the performance testing tool in different machines at our end and use them during test execution. This was followed by planning and designing of test scripts followed by implementation of the test designs.
- Scripts were then recorded, enhanced, verified and load was configured which included delay time, ramp up pattern using iterations and also time factor and configuration of concurrency. Scripts were tested and then executed in different scenario rounds with users ranging from 10 to 5000 in batches for different set of applications.
- Entire execution was divided into multiple rounds to do a progressive analysis of load and performance. Four rounds of Stress testing were also executed for a particular module ranging the users up to 20000.
- Successfully create multiple reservations in web based application and flash based application which got displayed in the application and transaction was recorded in the database automatically after test execution.
- Identified the problem areas in the set of applications, database and network level and reported the same to the client. Identify the functional deficiency in some of the set of applications.
- Test reports were generated by the tool. These reports were diligently analyzed to convert data into meaningful and actionable information. Result Analysis included reorganizing data and generating Error\Response Time graphs along with Average and Maximum response time chart wherever required.
- Prepared consolidated performance test report which described all contents of results in details on daily basis. Perform the test execution of the application again to ascertain performance improvement.
- Gateway team also provided recommendations on application and database platform to ensure that application does not break because of application, database and network level bottlenecks and supports the intended business users.
- Deactivate the license from our machine after successful end of the project and return it back to the client via NeoLOAD support team.
- There are 4 payment modes which are Cash, Credit Card, Check and Gift Card. User can use any of these 4 payment modes.
- The transaction includes retail and rental items rented or purchased which is first added to the cart and then payment can be done.
- User can view the details of transaction done.
- User gets discount for particular product purchase through Retail, Rental and Visitor Entrance section.

Challenges

One of the major challenges was to ensure that all load testing is done before after client's working hours. Gateway deployed a team of performance testing experts who were flexible to support this unique business need of the client. Some of the other challenges that we faced included:

- Propose an effective load testing tool that not only satisfies client's requirements but also falls within their budgetary constraints.

- Work jointly with client to identify key scenarios which covers the sections of the set of applications which are processing intensive.
- Parameterization of test scripts to create multiple reservations automatically through performance testing tool in the set of web based and flash based applications.
- Display of multiple reservations in the set of web based and flash based applications and transaction display in the database.
- Constant collaboration with client's team to ensure seamless process during testing to avoid any error blocks affecting the process.
- Give live demo of the task done for the day and resolve issues within the live demo during working hours.
- Performing test execution within live demo and give test results status.
- Preparing consolidated test reports for all the tasks performed on daily basis.
- Work at odd hours to support client's request on timing.
- Complete performance testing in a shorter time span to support client's business priorities.
- Create multiple reservation transactions in their set of web based and flash based applications and display its effect in the database automatically using performance testing tool.
- Working hours was to clash with their working hours.

Benefits

Gateway ensured ROI for the client's investment in performance testing by:

- Create multiple reservations for several users at a time automatically in the set of web based and flash based set of applications through appropriate parameterization of test scripts followed by test execution.
- Display of the multiple reservations for several users at same time in the set of web based and flash based set of applications.
- Record multiple reservations transactions for several users at same time in the database.
- Identify bottlenecks at the application, database and network level.
- Identify common functional bottlenecks appearing in the set of applications which affected the overall performance.
- Provide suggestions and recommendations to overcome the problem areas at application, database and network level through our consolidated test reports delivered on daily basis.
- Overall performance and user experience was optimized as a result of this exercise.
- Communication and close track of all communication between the Client and their Development team regarding the Change requests and schedule changes. Selection of the Module(s) and scenarios to be included for automation testing

Technology

The test automation tool used for performance testing was NeoLOAD 2.4.7. The license version of this tool was purchased by the client and provided to us for installation at our local environment.

The following technologies were used along with NeoLOAD 2.4.7 performance testing tool:

- Operating System: Windows 2003 server, Windows XP
- Browsers: Internet Explorer 7
- Load Generators – NeoLOAD Agents installed in different machines.
- Internal memory: 1GB RAM
- CPU configuration: Intel Core 2 Duo processor